

**Bonneville Power Administration  
Fish and Wildlife Program FY98 Proposal Form**

**Section 1. General administrative information**

**Title**    **Idaho Fish Screening Improvement - O&M  
(Conservation Agreement - East Fork Salmon)**

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**Bonneville project number, if an ongoing project**    9401500

**Business name of agency, institution or organization requesting funding**  
Idaho Department of Fish and Game

**Business acronym (if appropriate)**    IDFG

**Proposal contact person or principal investigator:**

Name	<u>Patrick Marcuson</u>
Mailing Address	<u>Box 1336</u>
City, ST Zip	<u>Salmon, ID 83467-1336</u>
Phone	<u>(208)756-6022</u>
Fax	<u>(208)756-6274</u>
Email address	<u>None</u>

**Subcontractors.**

Organization	Mailing Address	City, ST Zip	Contact Name
Model Watershed	206 VanDreff St	Salmon, ID 83467	Katie Slavin
Custer S&W Cons. District	Box 305	Challis, ID 83226	Karma Bragg

**NPPC Program Measure Number(s) which this project addresses.**

7:10A1, 7:10A2, 7:10A3, 7:10A4, 7:10A5, 7:10A6, 7:10A7

**NMFS Biological Opinion Number(s) which this project addresses.**

None

**Other planning document references.**

Salmon Summit, NPPC Strategy for Salmon Recovery, NMFS Salmon Recovery Plan, State of Idaho Statutes, Congressional Mitchell Act, USFS Land Use Plans for Challis and Salmon NF.

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### **Subbasin.**

Snake and Salmon

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### **Short description.**

This project request is for the unfunded portion of FY98 in the amount of \$200,000. A section of the East Fork of the Salmon River has a history of a major chinook spawning area in the Salmon River drainage. The area has 4 irrigation diversions, a very unstable stream and is in need of restoration. The combination of Model Watershed, Fish and Game, NRCS and technical committees all agree the best solution would be a conservation agreement. The landowner is in agreement.

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### **Section 2. Key words**

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
x	Anadromous fish	x	Construction	x	Watershed
*	Resident fish	*	O & M		Biodiversity/genetics
	Wildlife		Production		Population dynamics
	Oceans/estuaries		Research		Ecosystems
	Climate	*	Monitoring/eval.	*	Flow/survival
	Other		Resource mgmt		Fish disease
			Planning/admin.		Supplementation
			Enforcement	*	Wildlife habitat en-
		*	Acquisitions		hancement/restoration

### **Other keywords.**

Fish screens, ditch consolidations, ditch eliminations

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### **Section 3. Relationships to other Bonneville projects**

Project #	Project title/description	Nature of relationship
9401700	Idaho Model Watershed Habitat	Joint projects
9202603	Idaho Model Watershed Admin/Improvement	Technical Work group advise/priorities
8909800	Idaho Supplementation Studies	Smolt/fry movement v.s. screen efficiencies

### **Section 4. Objectives, tasks and schedules**

Briefly describe measurable objectives and the tasks needed to complete each objective. Use Column 1 to assign numbers to objectives (for reference in the next table), and Column 3 to assign letters to tasks. Use Columns 2 and 4 for the descriptive text. Objectives do not need to be listed in any particular order, and need only be listed once, even if there are multiple tasks for a single objective. List only one task per row; if you need more rows, press Alt-Insert from within this table.

<b>Obj 1,2, 3</b>	<b>Objective</b>	<b>Task a,b,c</b>	<b>Task</b>
1	Create an agreement with the goal of establishing a healthy, natural river corridor	a.  b.  c. d.  e.	With landowners concurrence, establish the objectives described, draw the boundaries of the river easement and get property appraisal. Complete negotiations between Idaho Fish and Game Easement Specialist, Model Watershed Coordinator, Nature Conservancy and the landowner If needed get final appraisal. If agreeable, close the transaction and establish deadlines for any agency or landowner work designated in the agreement. If unacceptable, terminate so project does not consume any more excessive landowner/agency personnel time.

***Objective schedules and costs***

<b>Objective #</b>	<b>Start Date mm/yyyy</b>	<b>End Date mm/yyyy</b>	<b>Cost %</b>
1.	01/1998	12/1998	100

**Schedule constraints.**

Proposed conservation agreement could fail because of lack of agreement. Deadlines for accomplishing agreement will be calendar year 1998. Failure to arrive at an agreement will involve screening 5 canals, building a bridge to access and construct screens and constant fight to deal with an unstable stream channel that disconnects from the irrigation canals.

**Completion date.**

12/31/98

## Section 5. Budget

List FY99 budget amounts for each category. If an item needs more explanation, provide it in the Note column. If the project uses PIT tags, include the cost (\$2.90/tag). **Be sure to enter a total on the last line: this is the amount of your budget request.**

Item	Note	FY98
Personnel		0
Fringe benefits		0
Supplies, materials, non-expendable property		0
Operations & maintenance		0
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		200,000
PIT tags	# of tags:	0
Travel		0
Indirect costs		0
Subcontracts		0
Other		0
<b>TOTAL</b>		200,000

### ***Outyear costs***

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	none	0	0	0
O&M as % of total	0	0	0	0

## Section 6. Abstract

Fish screens across irrigation canals were started as a high priority ESA effort to improve existing screens, unscreened, canals, and improve fish passage in Idaho tributaries with threatened or endangered species impacts. Consolidation and/or elimination of numerous diversions is the best solution to maximizing fish survival. Elimination or modification of gravel push-up diversions to fish friendly diversions saves fish, reduces stream instability and improves chemical, physical and biological characteristics of Idaho waterways. A conservation agreement on the East Fork of the Salmon would eliminate 5 screen projects, the need for a bridge and roads to access the screens and long-term operation and maintenance of screens, access and associated components. The conservation agreement approach is an interagency, technical workgroup high priority recommendation. Model Watershed, Nature Conservancy and Idaho Fish and Game are the cooperative negotiator with the landowner.

## Section 7. Project description

**a. Technical and/or scientific background.**

The fish screen program is a “do-it” activity. It is not a research or management action. All the technical aspects are formulated by the Fish Screen Oversight Committee comprised of each State, BPA and NMFS contract officers and engineers. The fish screen criteria generated by this committee were formed from the best available evaluations, literature review and engineering standards (see NMFS fish screen criteria). The fish screen programs are directed by Salmon Summit, NPPC Strategy for Salmon Recovery, NMFS Recovery Plan, Idaho State Statutes and Congressional appropriations of the Mitchell Act. NMFS has an informal consultation under Section 7(a)(2) of the ESA and a biological assessment relative to all fish screening and adult fishways funded under the Mitchell Act, “The programs under this act are not likely to adversely affect the listed salmon”.

Idaho’s fish screen program consults other fisheries managers, researchers and Model Watershed to evaluate each screen project. A set of biological questions are examined before each screen is constructed.

**b. Proposal objectives.**

1. Create an agreement with the goal of establishing a healthy, natural river corridor:

This objective would include:

- a. Eliminating irrigation diversions designated #16, 16A, 16B, and 14.
- b. No subdivision in defined river easement boundaries.
- c. No negative impact on riparian vegetation and streambanks by livestock.
- d. Consolidation of irrigation diversion #17 and #15 for landowners use.
- e. Eliminate all cost of road and bridge access to all canal screens, particularly #16.
- f. Provide fencing to exclude cattle
- g. Remove portion of rock dike to allow natural flooding over easement area.

**c. Rationale and significance to Regional Programs.**

The screen program in Idaho and other Columbia River States has been recognized as a positive value to protecting both anadromous and resident fish. In 1956, Gebhards found an annual loss of one (1) million smolts to 250 diversions in 500 miles of the Salmon River drainage.

In 1961, Corley estimated 279,000 smolts were saved by 84 fish screens on the Lemhi River. Munther, 1973, found 3,260 chinook juveniles diverted into one unscreened ditch in the Sawtooth valley. Kiefer, 1994, researched one Salmon River diversion (S-28) and found 68% of the down river migrants were funneled into this ditch. Present ongoing studies reveal some wing dams take all migrants, others on outside meanders divert most of the downstream migrants. The loss of game fish are not restricted to Anadromous

species, Clothier, 1954 and Spindler, 1955 emphasized the loss of resident fish in Montana years ago.

This proposal is an extension of the existing 9401500 Idaho Fish Screen Program. One of the best treatments beneficial to the entire fishery is the elimination of irrigation diversions.

This proposal eliminates 4 troublesome, expensive canals and expensive access to the screen sites. It also consolidates 2 ditches into one. This potential agreement coordinates directly with all of the restoration efforts from the East Fork to the Pacific Ocean.

#### **d. Project history**

The BPA title Upper Salmon Anadromous Fish Passage (NPPC Title: Idaho Fish Screening Improvement) started in 1993 to construct and equip a fish screen shop in Salmon, Idaho. This was a joint project with Mitchell Act funds administered by NMFS. This was originally set-up as a 5 year, 5 phase program. It has been modified several times by BPA because of various funding levels and contract period changes. In 1994, \$749,716 budget assisted with purchase of equipment and started assisting the Mitchell Act fish screen objectives. No additional grant awards were made until FY97. This award was \$701,000 of the \$1,000,000 requested. The FY98 request of \$1,000,000 was awarded at \$800,000 for contract calendar year of 1998. The present request is for the \$200,000 balance.

<u>FY</u>	<u>BPA Contract Award #</u>	<u>Amount Awarded</u>	<u>Purpose</u>	
1993	DE-FG79-92BP84362	341,978	Shop&Equipment	1993
1994	94FG14031	749,716	Equipment&Screen	
1997	94FG14031	701,000	Screen Projects	
1998	94FG14031	800,000	Screen Projects	

Project results are published monthly through 1994, quarterly and annually from 1995 through present. Additional reports include CBFWA - Fish Screen Oversight's tri-state report and NMFS Report to Congress.

#### **Major Results:**

Program has 8,000 square foot shop with specific use tools, construction equipment and engineering support to survey, design and construction contracting of all projects relating to the screen program.

BPA/MA funds reconstructed 160 of 240 screens to NMFS criteria, consolidated 12 ditches into 5 canals, eliminated 4 ditches for ground water systems (one elimination by conservation agreement), 4 infiltration delivery systems, 24 pump intake screens, one fish ladder, 10 headgates to restrict fish entry, 4 fish friendly diversion dams, 14 protective fences, evaluation of canals as fish rearing habitat and providing access to screen sites.

#### **e. Methods.**

The following describes the course of action for screening an irrigation canal, consolidation of ditches, replacing a diversion that blocks migration of fish and improving the conveyance flows of some inefficient ditches. Replacing or installing screens on pump intakes requires an agreement (IDFG file) with each irrigator. Headgate agreements (IDFG file) also require a signed agreement and a cost share by the irrigators.

- a. With landowners concurrence, establish the objectives described, draw the boundaries of the river easement and get property appraisal.
- b. Complete negotiations between Idaho Fish and Game Easement Specialist, Model Watershed Coordinator, Nature Conservancy, and the landowner.
- c. If needed get final appraisal
- d. If agreeable, close the transaction and establish deadlines for any agency or landowner work designated in the agreement.
- e. If unacceptable, terminate so project does not consume any more excessive landowner/agency personnel time.

**f. Facilities and equipment.**

Idaho Fish and Game has the facilities and equipment to complete all tasks. Occasional unexpected breakdowns require capital expenditures.

BPA and NMFS funded a new 8,000 square foot shop in Salmon, Idaho in 1993 to fabricate fish screens and related appurtenances. The shop was equipped with tools through generous funding by BPA and NMFS. Specific use tools and equipment include cold cut saw, band saw, plasma cutter, ironworker, sheet metal shear, power plate roller, profile roller, paint booth, abrasive blast machine, overhead crane, and MIG/TIG welders.

The Idaho Screen Program also has some various construction equipment used to install screens, headgates, fish passage ways, and support for riparian habitat improvements. This fleet consists of four dump trucks, dozer, 3/4 yard track excavator, front end loader, rubber tired backhoe, grader, rough terrain forklift, boom truck, and two utility service trucks. This equipment is used for small projects that would be too costly to bid out to private contractors and for routine maintenance of facilities.

IDF&G relies heavily on the private sector to construct medium and large scale projects. All concrete construction is performed by outside contractors. Some specialized equipment is used so infrequently that it is not practical to own by the program. Items of this nature would include concrete cutting machines and lowboy tractor-trailer transports. All concrete cutting needs are satisfied by hiring firms from the private sector. Heavy equipment such as the road grader is transported by commercial carrier. There are many contractors in the area that can provide equipment and manpower for any large project

requiring heavy equipment, heavy hauling, concrete pumping, blasting, and material screening.

The screen program also has engineering support equipment such as a total station survey system and data downloading interface to computers. This equipment allows our engineering staff to survey, design, and perform construction contracting of all projects relating to the screen program.

**g. References.**

Abernethy, C.S., D.A. Neitzel, and W. V. Mavros. 1996. Movement and Injury Rates for Three Life Stages of Spring Chinook Salmon *Oncorhynchus tshawytscha*: A comparison of Submerged Orifices and an Overflow Weir for Fish Bypass in a Modular Rotary Drum Fish Screen. Prepared by the Pacific Northwest National Laboratory for the Division of Fish and Wildlife, Bonneville Power Administration, Portland, Oregon.

Clothier, William D., 1954. Effect of water reductions on fish movement in irrigation diversions. *Journal Wildlife Mgt.*, Apr. 18 (2): 151-60.

Corley, Donald. 1961. Effect of irrigation diversions on smolt out-migrations in the Lemhi River, Idaho. M.S. Thesis, U of I.

Gebhards, Stacy. 1959. The effects of irrigation on the natural production of chinook salmon (*oncorhynchus tshawytscha*) in the Lemhi River. M.S. Thesis, Utah State Univ.

Keifenheim. M. 1992. USFS - Region 4 Salmon National Forest Level 1 Stream Diversion Inventory. In cooperation with IDFG and BLM-Salmon District.

Kiefer, Russel and Lockhart, J. 1994. Intensive evaluation and monitoring of chinook salmon and steelhead trout production. Crooked River and Upper Salmon River sites. U.S. Dept. of Energy, BPA, No. 91-73.

Munther, Gregory. 1973. unpublished USFS Program Rpt.

Spindler, John C. 1955. Loss of game fish in relation to physical characteristics of irrigation canal intakes. *Journal of Wildlife Mgt.* 19 (3): 375-82.

## **Section 8. Relationships to other projects**

This project is a cooperative effort of the Idaho Department of Water Resources, IDWS, the Bureau of Reclamation, USBR, the U.S. Forest Service, USFS, the Sawtooth National Recreation Area, SNRA, the Model Watershed Program, the Natural Resource Conservation Service, NRCS, the Shoshone-Bannock Tribes, Bureau of Land Management, BLM and the irrigators in the state of Idaho.



## Section 9. Key personnel

(See end of Document for Organization Chart)

Patrick Marcuson, Screen Program Coordinator, Salmon, ID 83467

### Summary:

My professional career features a diversity of fisheries science, management, rehabilitation and enhancement and supervisory activity. Besides working with salmon, trout, groundfish, shellfish and warm water fisheries, my experience includes considerable involvement with outdoor recreation, land allocation, planning and environmental protection. I have hired, trained and supervised over 125 technicians, currently supervise up to 30 employees, published a book and worked closely with a diverse array of landusers, agencies and public groups. I worked as a biologist for a board of commercial salmon fishermen in Alaska, for the National Marine Fisheries Service as an observer of the groundfishing fleet, as a biologist and manager for the State of Montana, a fisheries research biologist and program coordinator of the Anadromous Fish Screen Program for the State of Idaho. I owned and operated CRYSTAL OBSERVERS, INC., a certified shellfish and groundfish observer contractor.

### Education:

University of Idaho	BS	Zoology - Letters & Science
University of Idaho	MS	Fisheries Management

### Professional Accomplishments:

- Guided construction of 84 fish screens in irrigation canals.
- Initiated and operated successful private business.
- Administered employee payrolls, accounting, related duties.
- Designed and constructed four (4) fish ladders.
- Built two flow-control structures to assist salmon migrations.
- Guided construction of a salmon spawning channel.
- Simplified passage of salmon through beaver dams.
- Planned and constructed numerous remote fish egg incubators.
- Established and set up cabins and biological field camps.
- Analyzed and monitored several stream channel modifications.
- Taught operational techniques for numerous fish weirs I built.
- Supervised numerous fish population estimates.
- Organized and performed numerous salmon and trout egg takes.
- Initiated fish health surveys for two agencies.
- Coordinated two lake enrichment programs.
- Developed inventory of streams in two large geographic areas.
- Pioneered largest alpine lake investigation in USA.
- Drafted annual project budgets.

Attended conferences and made numerous oral presentations.  
Testified in court on reservations of instream flows.  
Trained and supervised 125 technicians, biologists and observers.  
Ordered equipment and supplies.  
Drafted over 100 scientific reports.  
Managed regional fisheries regs, public input and implementation.  
Resolved several land water allocation issues.  
Promoted land conservation practices with demonstration projects.  
Perfected lake stocking in my fish management region.  
Monitored and resolved an agricultural stream sediment problem.  
Inventoried and studied all golden trout populations in Montana.  
Supervised three graduate level research projects.  
Negotiated removal of 15 irrigation diversion dams through ditch consolidations.  
Coordinated elimination of 4 irrigation diversions through conversion to ground water.

## **Section 10. Information/technology transfer**

Type here (provide answers in paragraph form)

Idaho fish screen program hosted the 6th Annual Fish Screen Workshop in September, 1997. Representatives from 5 states, 5 federal agencies and county governments toured many of the projects. At least 3 tours are provided each year for various agencies, irrigators, contractors and various other groups. IDFG is a member of the Fish Oversight Committee and presents technical information.